

REMARKS

In the Office Action dated January 24, 2008, claims 1-9 stand objected to due to an informality in claim 1, and claims 1-9 stand rejected under 35 U.S.C. § 103(a) over Keys (U.S. Patent Pub. 2004/0235280, hereinafter “the ‘280 reference”).

The claims have been amended to remove reference numbers provided by way of example in related foreign prosecution-type claims. Claim 1 has been amended to address the informality indicated in the Office Action (namely, to add a missing word “first” for antecedent basis). Applicant appreciates the Examiner’s attention to the claims. In view of the amendment to claim 1, Applicant requests that the objections to claims 1-9 be removed.

Applicant respectfully traverses the Section 103 rejections because the sole ‘280 reference cited in the Office Action does not teach or suggest, nor has the Office Action asserted, the claimed low-temperature anneal carried out after an ion implant of dopant atoms of a second conductivity type. The Office Action appears to have mistakenly cited an anneal process that is carried out at an intermediate stage of manufacture, prior to the implant of dopants that are used (*e.g.*, as carried out to form source or drain extension regions). Specifically, the anneal process cited at paragraph 0028 is carried out before implanting Boron (cited as teaching “dopant atoms of the second conductivity type”). This is consistent with the statements in the Section 103 rejection at page 2 of the Office Action, which also indicate that the ‘280 reference discloses “annealing at 400-800°C for 5-120 seconds [0028] then implanting boron ions [0027].” In this regard, neither the Office Action nor the cited portions of the ‘280 reference discuss claim limitations directed to “after introduction of the dopant atoms of the second conductivity type, the semiconductor body is annealed by subjecting it to a heat treatment” (at a temperature range of 500-800°C) as in claim 1.

In addition to the above, it appears that the ‘280 reference uses a much higher temperature anneal after implant of its Boron atoms to address defect issues and to drive the Boron atoms into the substrate to distribute them into the amorphous region. For instance, paragraphs 0032 and 0033 discuss this subsequent annealing process as a laser anneal that is carried out at a temperature of between about 1200-1400°C to ensure that the second annealing melts the amorphous region and allows the dopants (*e.g.*, Boron) to evenly distribute. As discussed at paragraph 0032, this approach is to form an abrupt

junction that is “substantially defect-free.” This annealing approach does not teach or suggest the claimed approach, directed to a low-temperature anneal. As discussed at paragraph 0006 of the instant application, this low-temperature anneal is consistent with “the surprising recognition that annealing at intermediate temperatures, e.g. in the range of 800 to 950 degrees Celsius, is not suitable because at these temperature[s] a deactivation occurs of the Boron atoms....”

Applicant further traverses the Section 103 rejection of claims 1-9 because the rejection is based upon a sole reference and asserts no combination of references or modification of the sole reference that would appear relevant to asserting the cited ‘280 reference against the claimed invention.

In view of the above, the Section 103 rejection of claim 1 is improper and should be removed. Accordingly, the Section 103 rejections of claims 2-9, which depend from claim 1, should also be removed because the rejections rely upon the same, improper basis.


Applicant further traverses the Section 103 rejections because the limitations in dependent claims 2-9 have not been addressed. No reference has been cited as providing any teaching or suggestion of these limitations, and no indication as to where the limitations are taught or suggested in any prior art. Applicant therefore requests that the rejections of dependent claims 2-9 also be removed for these reasons.

Applicant has added new claims 10-20. These new claims draw support, for example, in the original claims and in the instant application at paragraphs 0006-0010. These new claims are allowable over the cited ‘280 reference for the reasons stated above in connection with claim 1 and as relevant to similar limitations, and further because the ‘280 reference fails to disclose various other limitations. For instance, the ‘280 reference fails to recognize the mitigation of deactivation of Boron (or other dopant) in carrying out an annealing process that is limited to a temperature range of between about 550 and 750 degrees Celsius so that “the deactivation of dopant atoms is nearly completely avoided.” As consistent with relevant case law and the M.P.E.P., the larger range of 400-800°C disclosed in the ‘280 reference is not recited with sufficient specificity (and with no supporting recognition of any deactivation problem) to anticipate the claimed range.

In view of the remarks above, Applicant believes that each of the rejections/objections has been overcome and the application is in condition for allowance. Should there be any remaining issues that could be readily addressed over the telephone, the Examiner is asked to contact the agent overseeing the application file, Peter Zawilski, of NXP Corporation at (408) 474-9063.

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